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Formulation and Evaluation of Herbal Lip Balm

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ABSTRACT

Lip balm is a frequently used cosmetic product. To keep the lips hydrated, a waxy material called lip balm is applied. Lip balm was created to shield the lips from environmental factors like the winter cold and to stop them from becoming dry and cracked. The lip balm keeps lips from becoming infected or irritated.It lessens the discomfort brought on by chapped lips as well. The components that go into manufacturing lip balm help to cure cracked lips and hydrate them. Lip balm is not gender specific, in contrast to lipstick. The majority of them are waxy. To prevent drying out and shield the lips from environmental factors, a lip balm is a moisturizer that is applied to the lips. When herbal substances are used in lip balm, the negative effects are reduced.

Key words:-Formulation, Evaluation, Stability, Herbal, Optimization.

INTRODUCTION

Today's lifestyle is significantly influenced by cosmetics. A more natural lifestyle is also the current trend, and most sectors, including cosmetics, are going green. Herbal remedies, natural foods, and natural remedies for healthy life are better choices. Products made from organic plants are likewise in high demand. In the personal care system, the use of herbal cosmetics has grown significantly. For thousands of years, people have utilized natural ingredients for traditional medical purposes all across the world. Pharmacological characteristics including cytostatic, antimicrobial, and anti-inflammatory actions are present in many of them. Their value in human medicine has been acknowledged.[1]

A natural substitute for conventional lip balms, herbal lip balm is made with botanical materials like beeswax, plant oils, and herbs. It improves the lips by hydrating, nourishing, and calming them—often without the use of harsh chemicals or artificial smells. A popular option for anyone looking for a more all-encompassing approach to lip care, herbal lip balms are valued for their mild yet potent qualities.[2]

Natural qualities included in organic products can be advantageous to both the environment and customers. On the other hand, lip tinting is an age-old technique for enhancing the lips' inherent qualities and adding attractiveness. Organic lip balm has become more popular in the personal care system of the current period. Chattopadhyay, on the other hand, claims that lipstick is an age-old technique for enhancing lip beauty. For this, the selection of hues, textures, and scents has been updated and broadened throughout time. [3]

Lipstick and lip balm are among the most common makeup and lip care items.Lip care products are mostly used to make lips look nice, hydrate them, shield them from damaging UV rays, etc. Lips have thin, distinct skin compared to other bodily parts. It lacks perspiration, sebaceous glands, and hair follicles. It has no built-in system to hold onto moisture or shield it from the elements. As a result, lips require greater attention, defense, and moisture preservation. Lip dryness, pigmentation, or discolouration might result from using subpar cosmetics. Certain substances, such as menthol or phenol, are particularly harmful for the lips. [4]

1.1 Lip Balm:-

A cosmetic product that is comparable to lip stick is lip balm. They shield the lips from damaging environmental elements and stop dryness. The creation of a lip balm using natural or herbal ingredients was the task at hand. Melting point, assessment of organoleptic properties such ascolor, odor, and appearance, and functionality evaluation (spread-ability test) are the methods used to check the stability of lip balm.Both men and women use lip balm as a cosmetic to maintain healthy lips. It protects the afflicted lips from cold sores and sores while maintaining the lips' natural shape and beauty. Butters, oils, and waxes are essential ingredients that need to be harmonized while making lip balms.[5]

Key ingredients including butter, oils, and waxes must have their concentrations matched to produce a lip balm with a melting point between 65 and 75° C. The formula's quality will vary based on the oil, wax, ratio, and color. While a product with a higher percentage of waxes and pigments can last longer, a product with a lower percentage can produce a smoother lip balm or lipstick.Softness and breaking point are two unique properties of lip balms that can be negatively impacted by the ingredients used in their formulations. Two formulas with the same melting point but distinct consistency may occur. Getting past these issues might be quite difficult. The elements in a recipe must be balanced in order for it to have the right melting, softening, and breaking points. [6,7]

Types of lip Balms :-

- **UV filter lip balm :-**Although this type of lip balm is suitable for all seasons, it is particularly helpful during the summer or when traveling to regions with higher levels of sunlight.
- **Nourishing lip balm :-** This type works best in winter.
- **Moisturizing lip balm :-** Using this lip balm in the cold can cause your lips to split since it absorbs too quickly. This type of lip balm is good for dry lips. All year long, you can apply hydrating lip balm.
- **Medicated lip balm :-** It should be applied with care. It acts as a softening and antiseptic medication.
- **Tinted Lip balm :-** You can wear tinted lip balm year round. [8]

Characteristics of lip balm :-

- Resistance to changes in temperature.
- Flavorful.
- Non-toxicity.[9]

Application of lip balm:-

- Heals chapped lips.
- Nourishes and moisturizes lips.
- Keeps your lips soft and supple.
- Protects lips from sun damage. [10]

Advantages of lip balm :-

- Lip balms help to protect the natural health and beauty of the lips.
- Sun block lip balms are proved to prevent ultraviolet rays from hurting the lips.
- They are not gender specific products and both men and women can use them.
- Lip balm products help to protect lips affected by cold sores, chapping and dryness.
- It refreshed, renewed and also addresses lip-related symptoms resulting from colds, flu and allergies.
- The use of natural lip cosmetic to treat the appearance of the face and condition of the skin. [11-16]

Disadvantage of lip balm:-

- Lip balms made of low-quality ingredients can harm the lips seriously. Such lip balms may dry out the lips instead moisturizing it.
- Lip balm addiction is another disadvantage usually seen with the use of them.
- The naturally derived colors and flavours are more difficult to obtain and also have issues related to stability in the products.
- Natural oils have other disadvantages such as greasier, comedogenic, and less spreadability. [11-16]

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Table 1: List of Natural Ingredients :- [17-22]

Base	Oils	Colouring Agent	Flavouring Agent
Cocca butter	Coconut oil	Beetroot	Strawberry
Beeswax	Olive oil	Pomegranate	Honey
Shea wax	Almond oil	Marigold	Orange
Shea Butter	Vitamin E oil	Tomato	Kesar
White bees wax	Peanut oil	Jabul	Raspberry
Yellow bees wax	Tea tree oil	Watermelon	Vanilla
Carnuba wax	Glycerine	Honey	Mangoe
Candelilla wax	Castor oil	Saffron	Rose oil
Mango butter	Jojoba oil	Turmeric	Sandalwood
Avocado butter	Corn oil	Capsicum	Jasmin

MATERIAL AND METHODOLOGY

2.1 Material :-

1. **Bees wax :-**

Beeswax is used in lip balms, lip glosses, hand creams, ointments, and moisturizers. And in cosmetics such as eyeshadow, blush and eyeliner. Beeswax is also an important ingredient in mustache and hair waxes, making hair smooth and shiny. Typically, beeswax is used in makeup products because it is a natural emulsifier, allowing liquid and oily makeup ingredients to bind and hold. It increases the thickness of solid products like lipstick, giving them structure, and the keeps them solid forsmooth application.

Fig 1 : Bees Wax

Synonyms: Cera alba

Biological source: Beeswax is naturally occurring wax produced in the bee's hives by honeybee.

Mellifera Glands under the abdomen of the bee's secrete this wax and it is used to build the honey

Family: Apidae**.**

2. **Coconut oil :-**
   The moisturizing and emollient properties of coconut oil make it potentially helpful in soothing dry, chapped lips. It is commonly used in lip balms, other lip products, and many other beauty and self-care products. It absorbs quickly and leaves skin soft and radiant. In particular, as a lip balm, it replenishes moisture and helps hydrate dry skin. If your lips are chapped, adding coconut oil to your lip care routine will help moisturize and maintain their softness.

Fig 2 : Coconut oil

Synonyms: Coconut Absolute, Coconut Fatty Acid Triglyceride, Coconut Oil, Copra Oil,

Biological Source : Coconut oil is the oil expressed from the dried solid part of endosperm of coconut, Cocosnucifera L.

Family: Palmae**.**

3. **Honey :-**
   Honey is a characteristic humectant, and in view of this that it draws in and holds dampness, keeping your lips hydrated over the course of the day. Honey additionally has mitigating properties to assist with alleviating dried lips. Honey's antibacterial properties additionally help to forestall contamination assuming that the lips become broken. It has been reported that honey can facilitate removing necrotic tissues, increase the granulation and epithelialization speed, and reduce scars.

Fig 3 : Honey

Synonyms: Madhu, Madh, Mel, Purified Honey.

Biological Source : Honey Is A Viscid And Sweet Secretion Stored In The Honey Comb By Various Species Of Bees, Such As ApisMellifera, ApisDorsata, ApisFlorea, ApisIndica And Other Species Of Apis.

Family : Apidae

4. **Rose oil** :-

Saturate Your Lip Keeping your lips hydrated involving rosehip oil will help with keeping them full and lessening the appearance of kinks. Rosehip oil is significant for keeping up with lips smooth and youthful. Flexible lips: With a swipe of rosehip oil, meager, dry lips arise as stout and saturated, giving you a definitive celebrity frown! A few lip gleamsguarantee to full your lips, in any case, saturating them consistently is an mind boggling strategy to keep up with your lips looking youthful and graceful.

Fig 4 : Rose oil

Synonyms : Attar of roses, rose otto, attar, atar, athar, ottar

Biological Source : Petals of various rose species, especially Rosa damascena (Damask rose) and Rosa centifolia (May rose or cabbage rose)

Family : Rosaceae

5. Turmeric powder :-

Turmeric powder is a spice derived from the root of the Curcuma longa plant. It's commonly used in cooking and traditional medicine, and in lip balm, it refers to the powdered form of turmeric used for its potential skincare benefits.

Fig 5 : Turmeric Powder

Synonyms : Haldi: (Hindi),Haridra: (Sanskrit), Saffron Indian, Curcuma, Rhizomacurcumae, Indian Saffron, Golden spice.

Biological Source: Dried rhizome: of Curcuma longa

Family: Zingiberaceae: (Ginger family)

6. **Tea tree oil :-**
   Tea tree oil is an essential oil extracted from the leaves of the Melaleucaalternifolia tree, a native Australian plant. It's known for its strong, pleasant smell and is widely used for its potential medicinal properties, particularly its antimicrobial and anti-inflammatory qualities. A key use is topically for treating skin conditions and infections. Using tea tree oil in lip balm provides a number of benefits, primarily due to its natural antiseptic and anti-inflammatory properties. It can help soothe and heal chapped or cracked lips, and even address minor lip irritations like cold sores.

Fig 6 : Tea Tree Oil

Synonyms: Melaleuca oil, AetheroleumMelaleucaealternifoliae, TTO, Tea Tree Oil, and Several other names listed in PubChem source.

Biological Source : MelaleucaalternifoliaSpecifically, the leaves of this plant

Family: Myrtaceae (myrtle family).

7. **Lavender infused oil :-**
   Lavender infused oil, derived from the flowers of Lavandulaangustifolia, is a popular ingredient in herbal lip balm formulations due to its calming, anti-inflammatory, and antimicrobial properties. Rich in linalool and linalyl acetate, lavender infused oil may help soothe and calm dry, chapped lips, while its antimicrobial properties may aid in preventing the growth of bacteria and fungi, promoting overall lip health and well-being. The oil's gentle, non-irritating nature makes it an attractive option for lip care products, particularly for those with sensitive skin.

Fig 7 : Lavender Infused Oil

Synonyms : Lavender oil, essential oil of lavender

Biological Source : Flower spikes of lavender plants, particularly Lavandulaangustifolia (English lavender), Lavandulalatifolia (spike lavender), and Lavandula x intermedia
(hybrid lavender).

Family : Lamiaceae (mint family)**.**

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8. MentholCrystals :-

Menthol is often included in lip balm for its cooling and soothing properties, particularly for treating chapped or irritated lips. It's a compound found in peppermint oil and provides a temporary relief from discomfort due to its cooling effect. While menthol can help soothe irritated skin, it's important to note that it can also be dehydrating and irritating to the lips if used excessively or improperly.

Sr.no	Ingredients	Quantity	Uses
1	Beeswax	7g	Base
2	Coconut oil	7g	Moisturizer
3	Honey	3g	Humectant
4	Rose oil	0.4g	Perfume
5	Turmeric powder	0.1g	Colouring agent
6	Tea tree oil	0.1g	Preservative
7	Lavender oil	0.1g	Activeingredients
8	Menthol Crystals	0.2g	Cooling agent

Fig 8 : Menthol Crystals

Synonyms: Peppermint camphor, 2-Isopropyl-5-methylcyclohexanol

Biology Source: Menthol is derived from the peppermint plant (Menthapiperita) or other mint plants.

Family: Lamiaceae family.

METHODOLOGY

3.1 Formulation Tablet:-

1. Procedure :-

Step 1: Prepare Ingredients and Equipment

1.Weigh all ingredients (beeswax, coconut oil, honey, rose oil, tea tree oil, lavender oil, menthol, and turmeric powder) accurately using a digital scale.

2. Gather Necessary Equipment:

- Double boiler or a heat-proof bowl over a pot of simmering water
- Stirring spoon
- Lip balm containers or tubes
- Thermometer (optional)

Step 2: Melt Beeswax and Coconut Oil

1. Place the beeswax and coconut oil in the top of the double boiler or heat-proof bowl.
2. Heat the mixture over low-medium heat, stirring occasionally, until the beeswax is fully melted.

Step 3: Add Honey

1. Once the beeswax and coconut oil are fully melted, add the honey to the mixture.
2. Stir well until the honey is fully incorporated and the mixture is smooth.

Step 4: Remove from Heat and Add Essential Oils and Menthol

1. Remove the bowl from the heat source.
2. Let the mixture cool slightly (around 40-45°C/104-113°F) to prevent essential oil evaporation.
3. Add the rose oil, tea tree oil, lavender oil, and menthol.
4. Stir well to combine.

Step 5: Add Turmeric Powder

1. Add the finely milled turmeric powder to the mixture.
2. Stir vigorously to ensure even distribution.

Step 6: Pour into Containers

1. Pour the mixture into lip balm containers or tubes.
2. Make sure to pour slowly and carefully to avoid air bubbles.

Step 7: Allow to Cool and Solidify

1. Let the mixture cool and solidify completely at room temperature.
2. Avoid disturbing the containers during this time.

Step 8: Final Check and Packaging

1. Ensure the lip balm has reached a smooth, consistent texture.
2. Label and store the lip balms properly.

2. Evaluation of lip balm:

- **Organoleptic properties:**
  Lip balm's organoleptic characteristics, including color, taste, odor, and appearance, were examined. [23]

Fig 9 : Herbal Lip Balm

- **Measurement of PH:**
  The pH of the lip balm was evaluated to look for any adverse effects. Because an acidic or alkaline pH can irritate lips, it was determined to maintain the formulation's pH as close to
  neutral as possible. To determine the pH, 1 gram of the substance was dissolved in 100 milliliters of water. The pH was measured using a pH meter.[24]

- **Stability studies:**
  Preparation lip balm was tested and analyzed to expedite the study process. Over 30 days at different conditions, such as room temperature (25°C), refrigeration (5°C), and over 40°C), and its organoleptic properties, PH, and spreadability were evaluated.[25]

- **Spreadability Test :**
  Spreadability is determined using a slide. The formulation is sandwiched between two blades and a load is applied; the recipe has been spread on the slides. Visual observations were made regarding the uniformity of the layer formation
  For this test, the following criteria have been established:
  G – Good: homogenous
  I – Moderate homogeneity; leaves few stops
  B – Bad: uneven [26]

Fig 10 : Spreadabilitylip balm

- **Skin Irritation Test:**
  It is carried out by applying small amount of formulated product on the dorsal surface of lefthand skin for 10 minutes of 20 participated voluntary candidates. Then any kind of inflammation, rash, erythema, edema on skin examine. [27]

- **Melting point:**
  Within the melting point apparatus, which had a magnetic stirring facility, the drug-containing capillary was immersed in liquid paraffin. Melting was visually assessed, and the melting point was recorded.[28]

3. Result :-

Sr no.	Evaluation Parameter	Observation
1	Melting point	64°C - 65°C
2	Organoleptic properties	
2.1	Colour	Faint yellow
2.2	Odour	Pleasant
2.3	Appearance	Smooth
3	Spreadability	Good
4	pH measurements	6.2
5	Skin Irritation	No

DISCUSSION

The assessment of the lip balm's organoleptic qualities—such as color, taste, odor, and appearance—guarantees that customers will find the product visually and sensually appealing. Positive organoleptic properties contribute to a positive user experience. The lip balm formulation's melting point was found to be within the permitted range, meaning that it may tolerate normal storage conditions without melting or changing texture. This is necessary to keep the lip balm stable throughout transportation and storage. The spreadability test evaluates the lip balm's ability to be applied evenly and smoothly. The lip balm's great spreadability indicates that it may be applied to the lips fast and easily, forming a protective layer that isn't distorted or fragmented.

CONCLUSION

The lip balm formulation, comprising natural ingredients, demonstrated stability at both room temperature and refrigerated conditions, with minimal changes in organoleptic properties and spreadability. The product's functionality was maintained under these storage conditions, indicating suitability for use. However, storage at high temperatures (40.0±2.0°C) was found to compromise product functionality. The melting point of the lip balm was determined to be suitable at 64°C. Overall, the study concluded that lip balms formulated with natural ingredients are safe and effective. Future modifications to excipient combinations may lead to enhanced product qualities.By understanding the importance and benefits of lip balm, individuals can make informed choices about their lip care routines and enjoy healthier, more comfortable lips.

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